TUBALL™ MATRIX

PROCESSING GUIDELINES

TUBALL™ MATRIX 617 beta

for silicone PSA

V04_20231215

RECOMMENDATIONS ON USE OF TUBALL™ MATRIX 617 beta

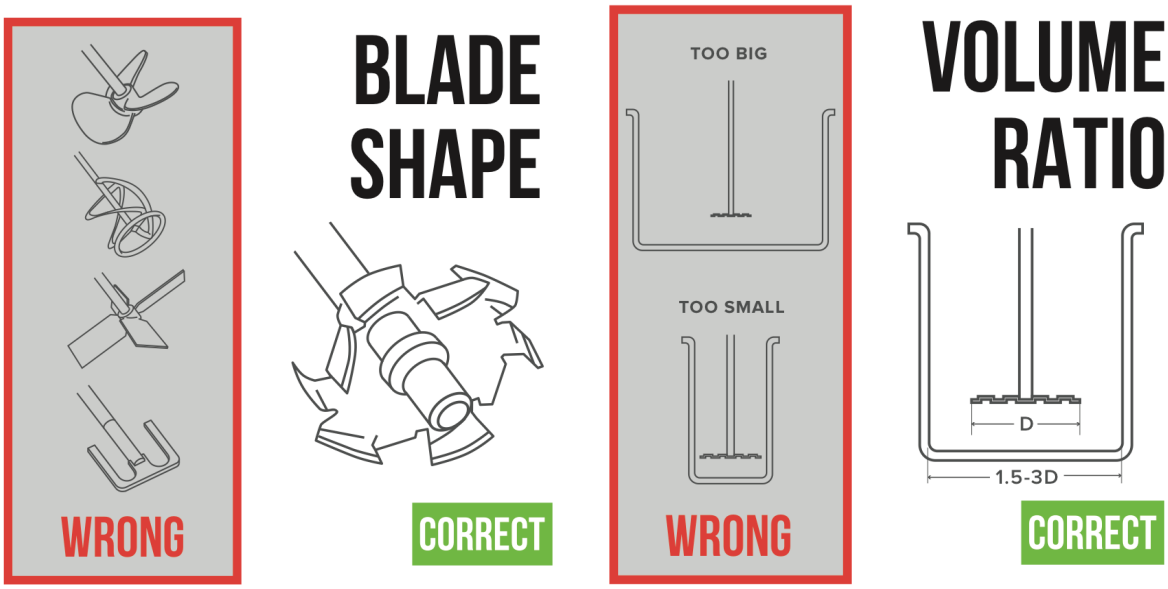
KEY STATEMENTS

- Designed for anti-static silicone PSA with PEDOT primer.
- Helps prevent ESD damage to sensitive electronics components in manufacturing environments and provide required anti-static effect for touch screen protective films.
- Is an additive based on graphene nanotubes and user-friendly reactive polymer which can react with the platinum-catalyzed silicon PSA resin without migration.
- Can be used in systems with a solid content of 25% or more.
- Also reduce peeling off voltage, retain transparency level while it is easy to use with standard coating process.

MIXING EQUIPMENT

TUBALL™ MATRIX can be diluted into compounds through the use of standard silicone compounding equipment such as a mechanical overhead stirrer. Other approaches for masterbatch dilution may be used in case their mixing efficiency is sufficient.

Dilution should be conducted in a cylindrical mixing container with a flat bottom. Use impeller blade of certain shape to disperse **TUBALL™ MATRIX** in neat resin. Pay attention to the gap size between container and blade.



DILUTION PRINCIPLES

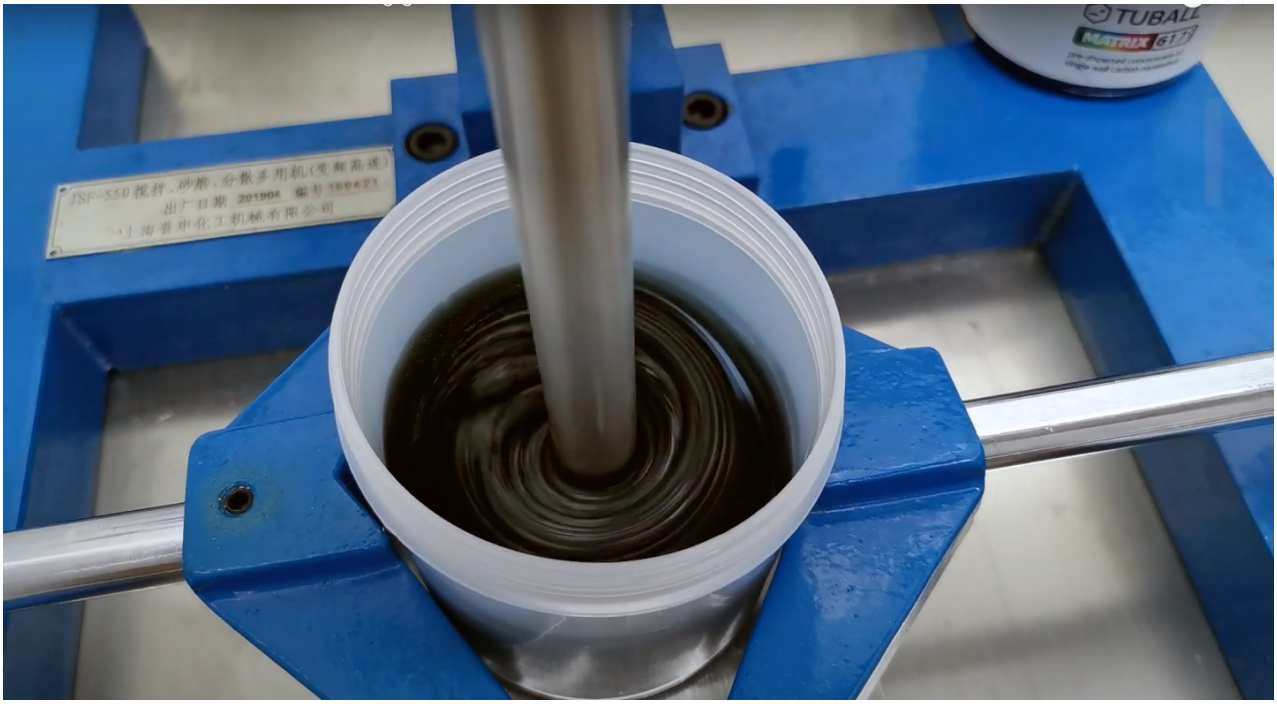
An example of PSA formulation based on platinum catalysts with using 2 phr **TUBALL™ MATRIX**.

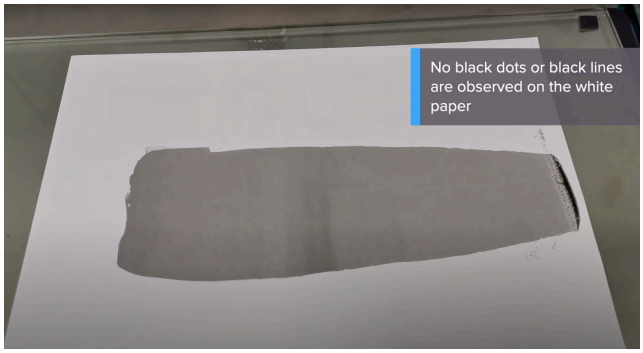
SILICONE PSA	
Material	**PHR**
Silicone Resin	100
TUBALL™ MATRIX	2 wt.% TUBALL™ MATRIX 617 beta
Adhesive promoter	moderate
Methylbenzene toluene solvent	300–350
Cross-link agent	moderate
Platinum catalyst	moderate

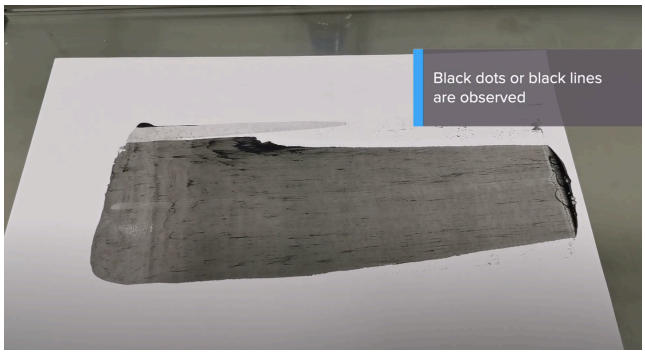
MIXING PROCEDURE

1. Mix **TUBALL™ MATRIX** into PSA resin.

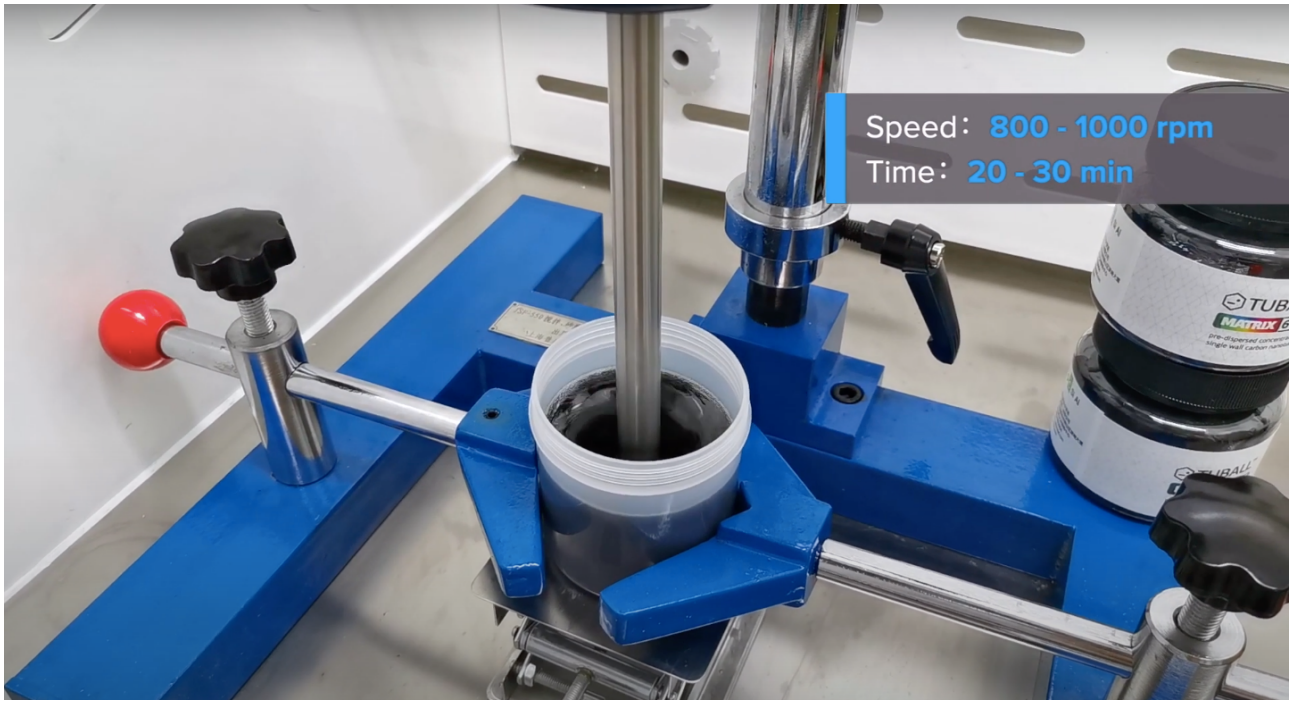
	TUBALL™ MATRIX 617 beta
Speed, rpm	600–800
Time, min	30



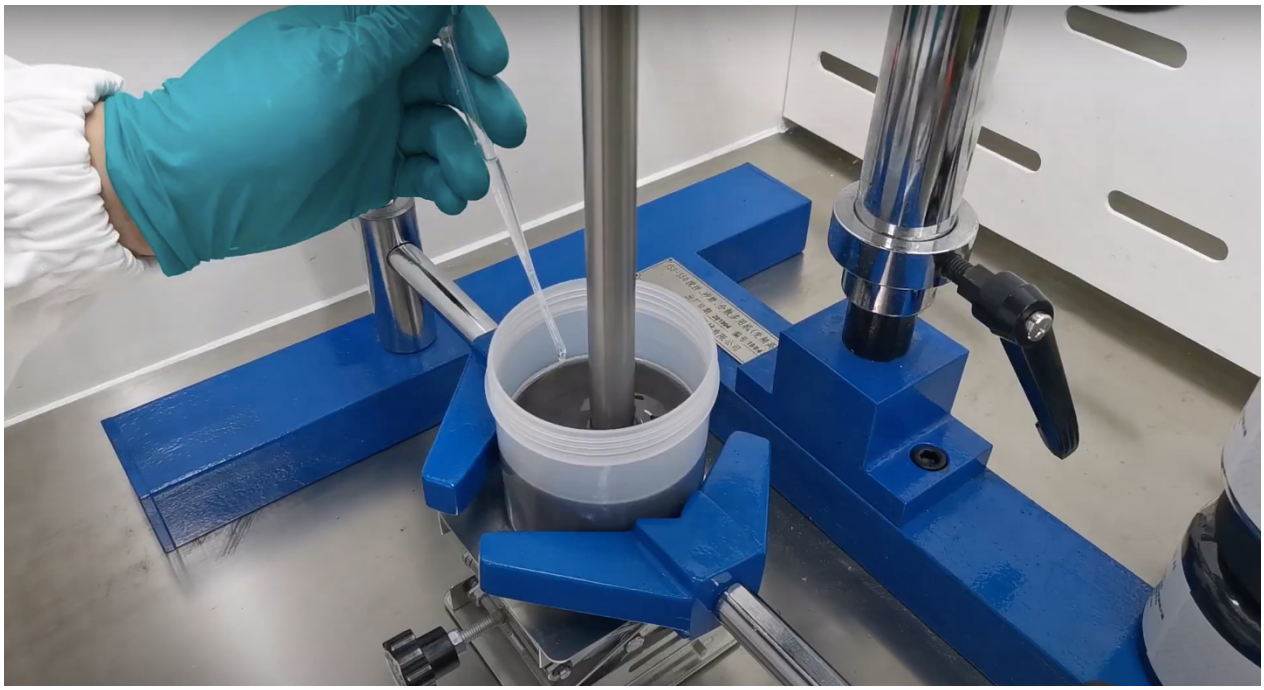




3. Add diluted **TUBALL™ MATRIX** and PSA resins into solvent.

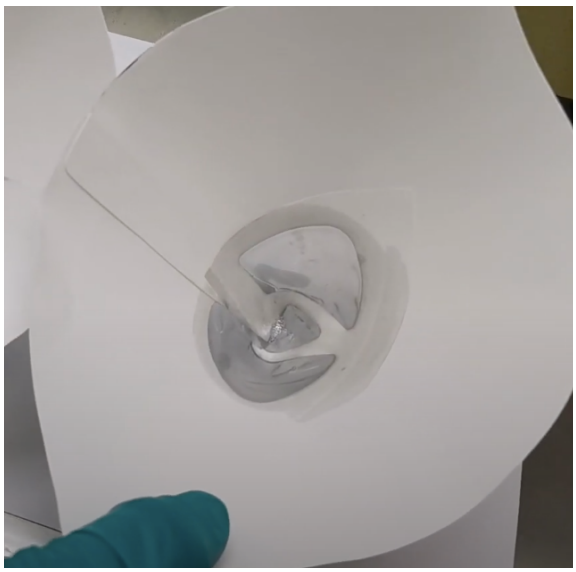


4. Add curing agent, binder, platinum catalyst into resin: 800–1000 rpm, 10–15 min.

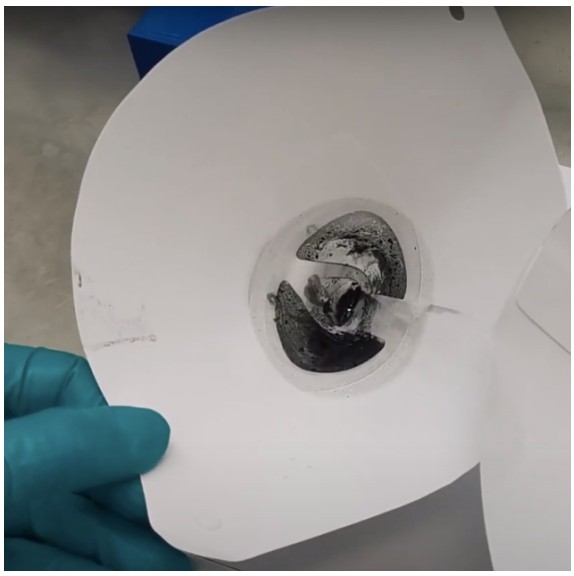


5. Filter the dispersion with 300-mesh press cloth or the filter element larger than 20 microns.

Good filtering



Bad filtering



6. Curing.

The following curing parameters was used (may vary based on your PSA formulation):

	TUBALL™ MATRIX 617 beta
Temperature, ºC	150
Time, min	1.5

7. Check quality of PSA film with **TUBALL™ MATRIX**:
    - Resistivity measurement;
    - Peel-off strength test;
    - Wiping test.

POTENTIAL INFLUENCE ON FORMULATION

Influence on stripping force

Replaced with 28 phr of low stripping force resin, 70 phr of high stripping force resin, and 2 phr of **TUBALL™ MATRIX**.

Influence on the transparency and color

1 phr **TUBALL™ MATRIX** meet 86% light transmittance. Reducing the addition of **TUBALL™ MATRIX** is beneficial to control the decrease of transparency.

Option also is to use a combination with PEDOT primer.

TROUBLESHOOTING

Viscosity

To decrease viscosity, you can add solvent. The final resin viscosity should be controlled at around 20,000 cPs. Too low viscosity leads to not appropriate dispersion of **TUBALL™ MATRIX**.

Time of use

Please use PSA dispersion as soon as possible to avoid the reduction of platinum catalyst activity.
It is recommended to carry out only the first step separately (without dilution).
Subsequent operations such as dilution starting from the second step can be carried out before the film coating.
Low viscosity of PSA dispersion is caused by sedimentation and agglomeration problems during long-term storage.

ELECTRICAL RESISTIVITY MEASUREMENTS

It is recommended to follow the international standards for measurement of electrical properties in the laboratory and for molded parts. Non-standard methods and accuracy of the handheld devices and surface quality of samples can affect the data.

OCSiAl supports customers for qualified electrical resistivity measurements. To perform the correct measurements please refer to the Electrical resistivity guidelines at YouTube channel https://www.youtube.com/watch?v=4cgU9mkHiKo

Or contact our regional offices and technical support centers to have a hard copy of the guidelines or request for measurements of your samples.

WARRANTIES AND DISCLAIMER

The Products correspond to the chemical composition indicated in the Technical Data Sheet and the Safety Data Sheet. The information contained in this document (Information) is based on trials carried out by OCSiAl and may contain inaccuracies or errors that could cause injury, loss or damage.

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